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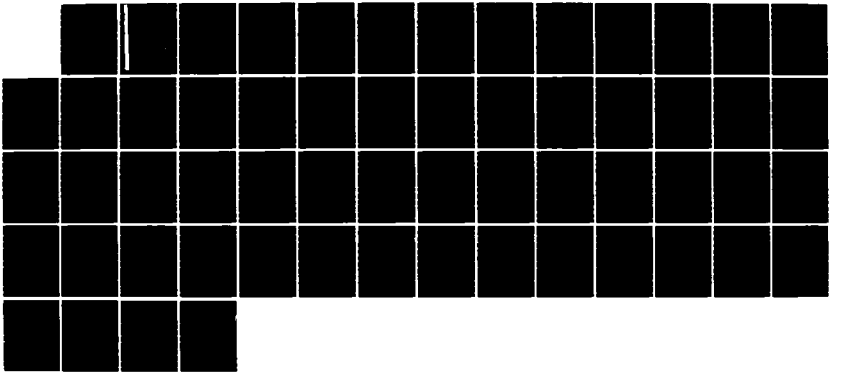

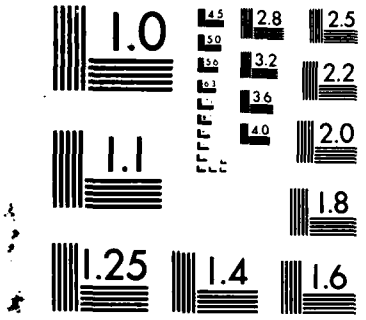

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DEPARTMENT OF DEFENCE

DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION

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MELBOURNE, VICTORIA

Structures Technical Memorandum 449

THE CT4 FLIGHT TRIALS TEST PROGRAM

by

LEONARD R. GRATZER

AUGUST 1986

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ERRATA

In the Introduction on page 1, paragraph 4 should be ammended to:-

The flight test program, designated ARDU Test Schedule 1649, was developed at ARL by SQNLDR Wurf and refined at ARDU by FLTLT Jones. It required four ARDU pilots to each fly 8 missions covering student and instructor continuation training and special flights for undercarriage load measurement. These 32 sorties were designed to represent a student pilot training syllabus of 60 hours.

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SUMMARY

Between 1978 and 1980 The Aircraft Research and Development Unit (ARDU) and ARL carried out a series of flight trials in order to determine typical load histories for a CT4 Airtrainer. These supplied representative flight data which provided the basis of load sequences used in the full scale fatigue test.

This report describes the parameters measured and lists the transcripts of the pilots' voice records.

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1. INTRODUCTION

The CT4 Airtrainer is a small piston engined twin seater aircraft built by New Zealand Aerospace Limited and used by the RAAF for initial flight training. It is a low wing all metal aircraft with non-retractable undercarriage.The general layout and main characteristics of the CT4 are shown in Figure 1.

ARL was required to determine representative flight loads for use in a full scale fatigue test of a CT4 airframe (Ref. 1). To enable this to be achieved, flight trials commenced in 1978. Eleven flights were carried out in that year and the remainder of the flights was conducted from April to December 1980.

The purpose of the flight trials was three-fold:

a. Envelope flying to limit conditions;
b. The creation of histories of typical squadron usage; and
c. Measurement of other flight paremeters.

The flight program, designated ARDU Test Schedule 1649, was developed at ARL by SQNLDR Wurf and refined at ARDU by FLTLT Jones so as to compress a syllabus of 60 student flying hours into 8 flights. They were to be flown by four ARDU pilots. These 8 flights consisted of training missions, undercarriage flights and instructor continuation training.

The flights were carried out on CT4 A19-031. The four pilots each flew the same group of 8 flights. However two flew with full fuel and two with half fuel.

Besides the 32 flights mentioned above, a number of other flights were flown to enable some more specific data such as turbulence and heavy landing measurements to be recorded.

A complete summary of all flights carried out during the flight trials program is shown in Table 1.

2. INSTRUMENTATION

During the flight trials, recordings were made on the Leach MTR2400 tape recorder. The data were recorded in a 50 channel multiplexed format at 60 Hz. (This was later increased to 120 and then 240 Hz to measure the high frequency vibrations present in the empennage).

The data consisted of the output from 40 electrical resistance strain gauges and 27 other transducers. This was clearly more than the system maximum of 50 channels, so two configurations were used with each containing the addition of 8 low speed analogue and 1 low speed digital channels multiplexed at 6 (12 and 24) samples per second.

Configuration 1 excluded the undercarriage strains and configuration 2 excluded empennage strains. Tables 2 and 3 list the channel numbers and associatated data type on the flight trials aircraft, for each of the two configurations.

3. STRAIN GAUGE LOCATIONS

The locations of the forty strain gauges were chosen to enable a load distribution evaluation to be made of the complete airframe. Gauges were placed on the fuselage, wing, horizontal and vertical tails and on the undercarriage legs. Figure 2 shows the location of the strain gauges on the airframe of the flight test aircraft.

4. UNITS OF MEASUREMENT

The data were all recorded in *Computer Units* and therefore were required to be converted into *Engineering Units*. The conversion factors used in this process for the normal acceleration and the strain gauge channels are shown in Table 4.

5. FLIGHT PROFILES

The flight test aircraft was equipped with a voice recorder which allowed the pilot to describe all manoeuvres and significant events while noting the count indicator of the flight data recorder.

This enabled correlation of all events with flight measurements. To enable any future examination of the events, the Appendix contains a complete transcript of all information obtained from the pilots' voice records. This included descriptions of major manoeuvres, timing intervals, height, weather, barometric conditions and pilot's name.

Some flight voice records were either lost or undecipherable and no information was available. All other flights are listed in the Appendix.

6. CONCLUSION

A series of flight trials of a CT4 aircraft was conducted in order to obtain representative flight data. These data subsequently formed the basis for the load sequences used in the CT4 Full Scale Fatigue Test.

7. REFERENCE

1. Gratzer, L. R. The test loads sequences applied to the CT4 full scale fatigue test. ARL-STRUC-TM-415, June 1985.

Flight	Date	Description
1	-Apr-78	Low level full fuel test flight
2	-Apr-78	Undercarriage test flight
3	6-Jul-78	Full fuel low level envelope flight
4	10-Jul-78	Aborted flight
5	11-Jul-78	Full fuel high level envelope flight
6	11-Jul-78	Low level half fuel test flight
7	14-Jul-78	Full fuel Mission 1
8	14-Jul-78	Full fuel Mission 2
9	17-Jul-78	Full fuel Mission 3
10	28-Apr-80	Low level full fuel envelope flight
11	28-Apr-80	Undercarriage test flight
12	29-Apr-80	Full fuel Mission 1
13	30-Apr-80	Full fuel Mission 2
14	1-May-80	Full fuel Mission 3
15	2-May-80	Full fuel Mission 4
16	5-May-80	Full fuel Mission 5
17	5-May-80	Full fuel Mission 6
18	7-May-80	High level full fuel envelope flight
19	7-May-80	Low level half fuel envelope flight
20	8-May-80	Full fuel Mission 8 (U/C)
21	8-May-80	Half fuel Mission 7A (Instructor continuation training)
22	14-May-80	Full fuel Mission 7B (Turbulence search and low flying)
23	4-Jun-80	Full fuel Mission 1
24	4-Jun-80	Full fuel Mission 3
25	5-Jun-80	Full fuel mission 2
26	5-Jun-80	Full fuel Mission 4
27	6-Jun-80	Full fuel Mission 6
28	6-Jun-80	Full fuel Mission 5
29	9-Jun-80	Full fuel Mission 8 (U/C)
30	10-Jun-80	Half fuel Mission 1
31	10-Jun-80	Half fuel Mission 2
32	11-Jun-80	Half fuel Mission 3
33	12-Jun-80	Half fuel Mission 4
34	12-Jun-80	Half fuel Mission 5
35	19-Jun-80	High speed sample rate flight 1
36	19-Jun-80	Half fuel Mission 8 (U/C)
37	20-Jun-80	Half fuel Mission 6
38	15-Jul-80	High speed sample rate flight 2
39	17-Jul-80	Airframe overspeed flight 1
40	17-Jul-80	Half fuel Mission 1
41	18-Jul-80	Half fuel Mission 2
42	18-Jul-80	Half fuel Mission 3
43	21-Jul-80	Half fuel Mission 4
44	22-Jul-80	Half fuel Mission 5
45	22-Jul-80	Half fuel Mission 6
46	23-Jul-80	Half fuel Mission 8 (U/C)
47	24-Jul-80	Airframe overspeed flight 2
48	5-Aug-80	Half fuel heavy landing flight
49	19-Nov-80	Pt Cook area - Turbulence
50	20-Nov-80	Pt Cook-Nhill-Edinburgh Manoeuvre and convective Turbulence
51	28-Nov-80	Adelaide Hills, Turbulence
52	1-Dec-80	Adelaide Hills, Turbulence

Table 1 - Summary of CT4 Flights TS.1649

Ch.	Quantity
1	Vert. Accel
2	Lat. Accel
3	Long Accel
4	Roll Rate
5	Pitch Rate
6	Yaw Rate
7	Incidence
8	Sideslip
9	Pt Fwd Accel
10	Pt Aft Accel
11	Stbd Fwd Accel
12	Stbd Aft Accel
13	Nose Accel
14	Tail Accel
15	Fin tip Accel
16	SG 5BE Wing main spar WS72
17	SG 9BE Wing main spar WS42
18	SG 21SE Wing front spar WS26
19	SG 27BE Wing root rib WS93
20	SG 2BE Wing main spar WS112
21	SG 4BE Wing rear spar WS112
22	SG 6BE Wing main spar WS72
23	SG 8BE Wing rear spar WS72
24	SG 10BE Wing main spar WS42
25	SG 12BE Wing rear spar WS14

Ch.	Quantity
26	Reserved
27	Reserved
28	SG 18CE Wing rear spar WS42
29	SG 20TE Wing rear spar WS42
30	SG 22SE Wing front spar WS26
31	SG 24SE Wing rear spar WS24
32	SG 26SE Wing root rib FS71
33	SG 28BE Wing root rib FS93
34	SG 30SE Wing root rib FS112
35	SG 32RA Wing shear WS25,FS93
36	SG 32RB Wing shear WS25,FS93
37	SG 32RC Wing shear WS25,FS93
38	SG 33TE Fin main spar root
39	SG 34TE Fin main spar root
40	SG 36BE Tailplane main spar TS32.3
41	SG 37BE Tailplane main spar TS5.9
42	SG 38BE Tailplane main spar TS5.9
43	SG 55CE Bending pitch input
44	SG 51CE Fuse Long - LH lower
45	SG 52CE Fuse Long - RH lower
46	SG 53TE Fuse LOng - LH upper
47	SG 54TE Fuse Long - RH upper
48	Digital L.S.M.
49	Analogue L.S.M.
50	Phase/event Marker

Analogue Low Speed Multiplexer

1. Reserved
2. I.A.S.
3. Altitude
4. Aileron Position
5. Elevator Position
6. Rudder Position
7. Flap Position
8. Stag. Temp

Digital Low Speed Multiplexer

1. J-Tec Airspeed
2. Fuel flow
3. Engine RPM
4. Descent Rate

Table 2 - Channel Numbers and Associated Transducers
Configuration 1

Ch.	Quantity
1	Vert. Accel
2	Lat. Accel
3	Long Accel
4	Roll Rate
5	Pitch Rate
6	Yaw Rate
7	Incidence
8	Sideslip
9	Pt Fwd Accel
10	Pt Aft Accel
11	Stbd Fwd Accel
12	Stbd Aft Accel
13	Nose Accel
14	Tail Accel
15	Fin tip Accel
16	SG 5BE Wing main spar WS72
17	SG 9BE Wing main spar WS42
18	SG 21SE Wing front spar WS26
19	SG 27BE Wing root rib WS93
20	SG 2BE Wing main spar WS112
21	SG 4BE Wing rear spar WS112
22	SG 6BE Wing main spar WS72
23	SG 8BE Wing rear spar WS72
24	SG 10BE Wing main spar WS42
25	SG 12BE Wing rear spar WS14

Ch.	Quantity
26	Reserved
27	Reserved
28	SG 18CE Wing rear spar WS42
29	SG 20TE Wing rear spar WS42
30	SG 22SE Wing front spar WS26
31	SG 24SE Wing rear spar WS24
32	SG 26SE Wing root rib FS71
33	SG 28BE Wing root rib FS93
34	SG 30SE Wing root rib FS112
35	SG 32RA Wing shear WS25,FS93
36	SG 32RB Wing shear WS25,FS93
37	SG 32RC Wing shear WS25,FS93
38	SG 43CE U/C axial 2 in. from bolt
39	SG 44CE U/C axial 2 in. from bolt
40	SG 45BE U/C Norm Bend 10.8 in. from bolt
41	SG 46BE U/C Norm Bend 10.8 in. from bolt
42	SG 47BE U/C T'verse Bend 10.8 in. from bolt
43	SG 48BE U/C T'verse Bend 10.8 in. from bolt
44	SG 49SE U/C T'verse shear 11.4 in. from bolt
45	SG 50SE U/C T'verse shear 11.4 in. from bolt
46	SG 53TE Fuse LOng - LH upper
47	SG 54TE Fuse Long - RH upper
48	Digital L.S.M.
49	Analogue L.S.M.
50	Phase/event Marker

Analogue Low Speed Multiplexer

1. Reserved
2. I.A.S.
3. Altitude
4. Aileron Position
5. Elevator Position
6. Rudder Position
7. Flap Position
8. Stag. Temp

Digital Low Speed Multiplexer

1. J-Tec Airspeed
2. Fuel flow
3. Engine RPM
4. Descent Rate

Table 3 - Channel Numbers and Associated Transducers
Configuration 2

Channels Common to both Configurations

Channel	Cal. Factor
1	-0.005
16	1.105
17	1.395
18	0.598
19	0.579
20	0.728
21	0.729
22	1.058
23	0.719
24	1.447
25	1.663
26	0.057
27	0.057
28	0.212
29	0.706
30	0.600
31	0.554
32	0.584
33	0.585
34	0.596
35	0.594
36	0.606
37	0.600
46	0.218
47	0.217

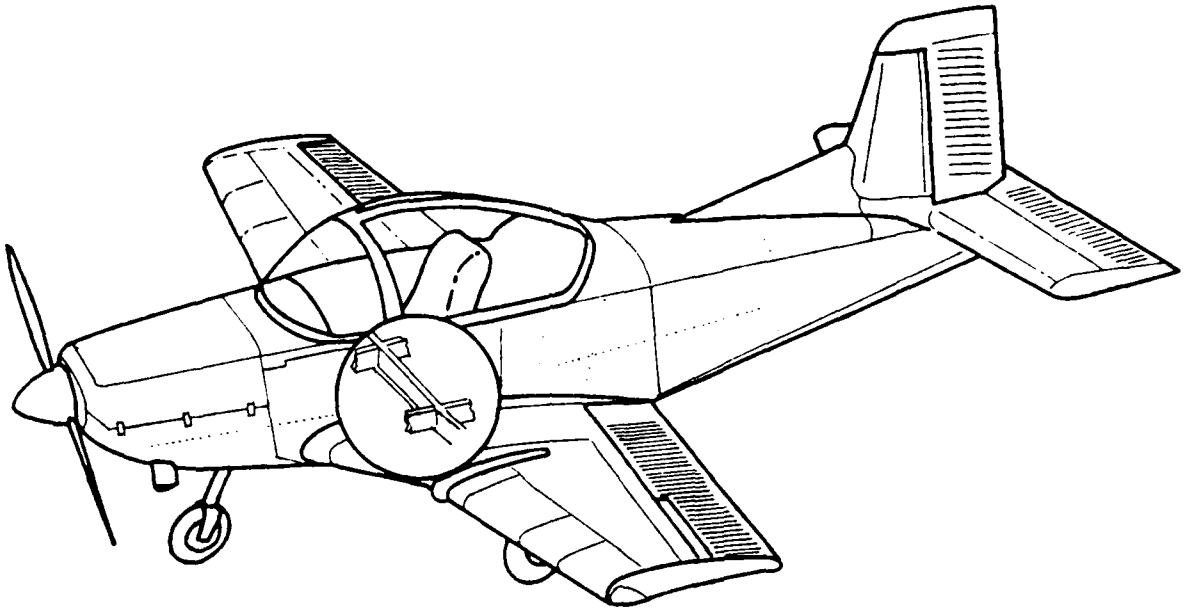
Additional Channels on Configuration 1

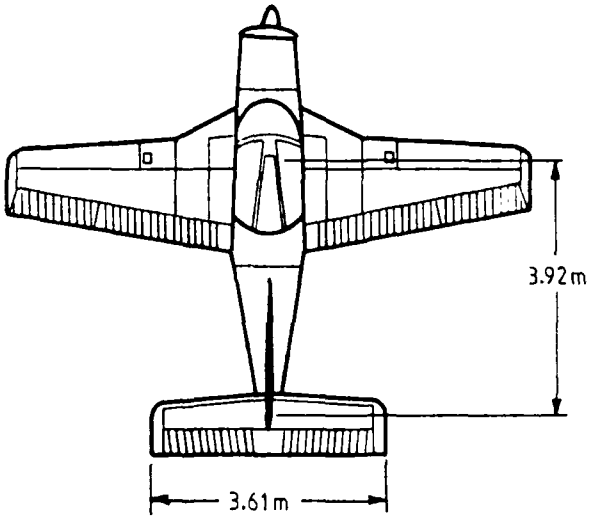
Channel	Cal. Factor
38	0.774
39	0.785
40	1.401
41	1.393
42	0.726
43	0.733
44	0.349
45	0.341

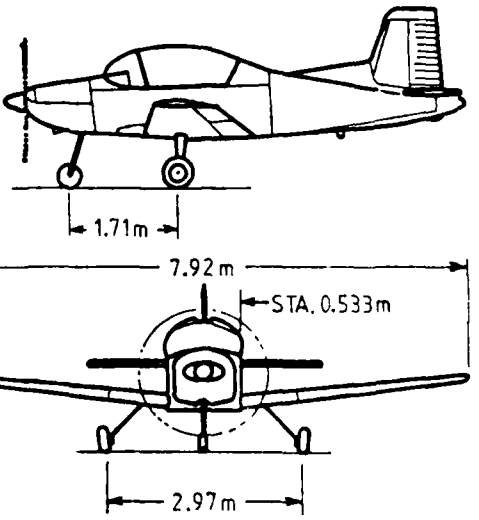
Additional Channels on Configuration 2

Channel	Cal. Factor
38	0.575
39	0.583
40	1.397
41	1.388
42	0.724
43	1.047
44	0.342
45	0.341

Table 4 - Transducer Calibration Factors for Flight Trials Aircraft







Wing Characteristics	
Type: 2 spar stressed skin	
Mean chord: 1.63 m (64.25 in)	
Area: 11.98 m^2 (129 ft^2)	
Loading: 913.1 Pa (19.07 lb/ft^2)	
Aspect ratio: 5.25	
Angle of incidence: Root	3°
Tip	0°
Dihedral angle:	6°45'
Empennage incidence	0°

Weight	
Design Gross Weight	10676 N (2400 lb)
Maximum AUW	10676 N
Max. aerobatic AUW	10676 N
Fuselage stowage capacity	756 N (170 lb) (normal)
	445 N (100 lb) (aerobatic)
Fuel weight (total)	1441 N (324 lb)
Pilot weight (each)	890 N (200 lb)

Fig.1 CT4 Airtrainer and main characteristics

Notes:

BE:–	Bending bridge, combining tensile & compressive strains.
CE, TE:–	Separate compressive or tensile strains.
SE:–	Shear bridge
RA, RB, RC:–	Rosette

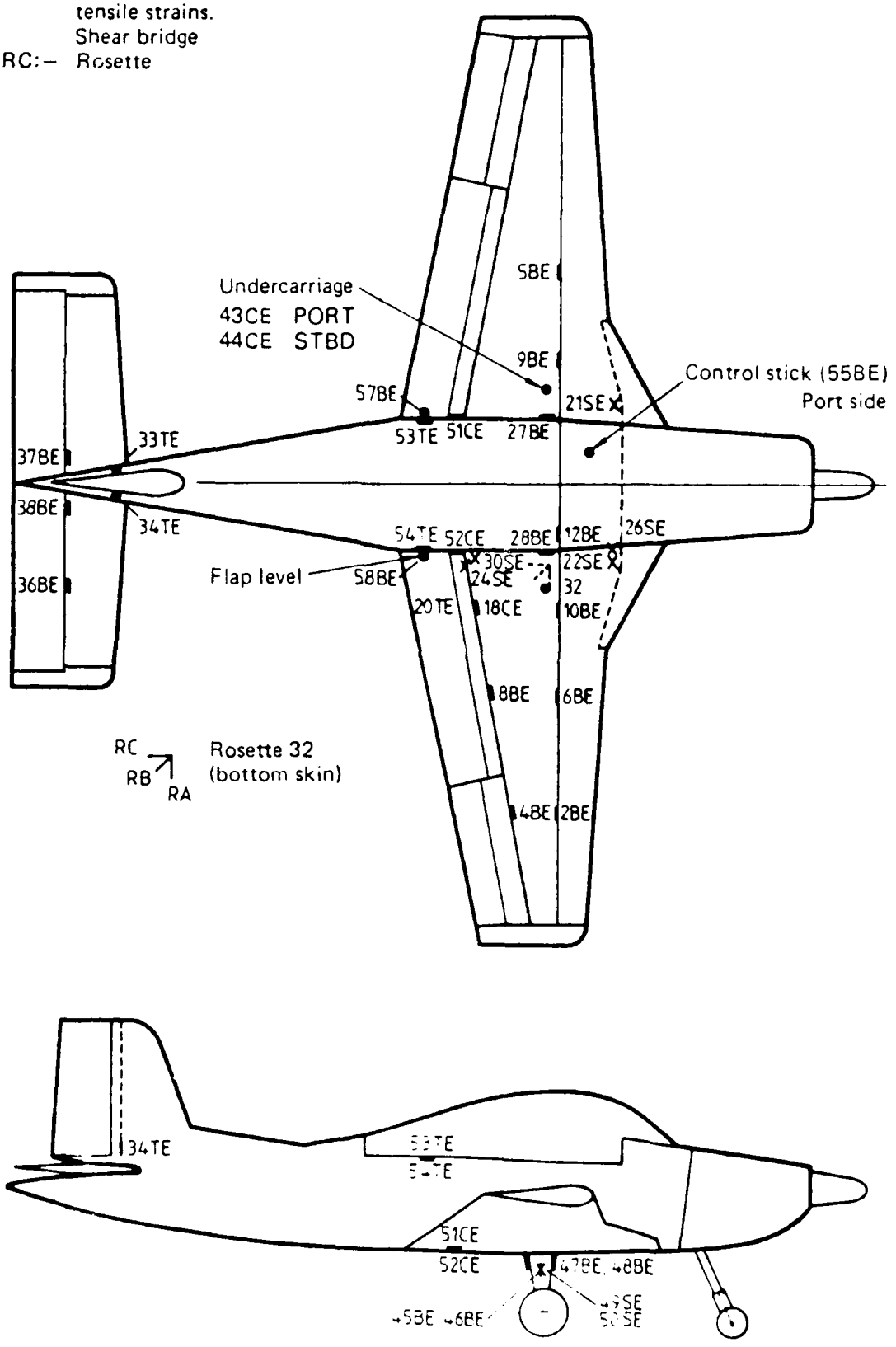


Fig.2 CT4 Airtrainer - Strain gauge positions on flight test aircraft

APPENDIX

Transcript of Pilots' Voice Records

Flight 1 /04/78 Low level Full Fuel Test Flight

Base: Point Cook

Pilot: F/L T Jones

Weather:

FM: U/S

Fuel Used: unknown

Known Faults *Channels* 9,10,11,12,13,14 - Not Connected

Fuel Flow - Not Connected

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	40	Ground Run and Calibration for 27/04/80				
9999	2	0	20	Ground Run for 27/04/80				
9999	3	0	25	Ground Run for 27/04/80				
9999	4	0	105	Ground Run for 28/04/80				
9999	5	0	135	Taxiing Right Turn, Left Turn, Right Turn, Left Turn				
9999	6	0	105	Take-off, Climb Out				
9999	7	0	75	2G Left Turn (Too Slow - Near Stall)	2000	85	1800	
9999	8	10	70	2G Left Turn	2000	100		90
9999	8	75	150	2G Right Turn	2000	100		100
9999	8	155	220	Increasing Speed 2770 RPM 26"	2000	100	2000	140
9999	8	225	325	2G Left Turn	2000	140	2000	120
9999	8	350	425	2G Right Turn	2000	140	2000	110
9999	8	500	600	3G Pitch Up	2000	135	1800	
9999	8	650	750	-1G Pitch Down then 3G pitch Up	2450	90	1900	100
9999	8	755	850	Flat Turn Left though 270 deg	1940	100	1900	100
9999	8	875	975	Flat Turn Right through 270 deg	1900	100	2050	80
9999	8	980	995	Accelerating 26" 2600RPM 85 lb/hr	2000	80	2000	120
9999	8	1000	1050	Max Rate Turn Left	2000	120		100
9999	8	1060	1125	Max Rate Turn Right	2080	120		
9999	8	1150	1225	5.5G Pull Up at 170 Kts	2070	120	1500	110
9999	8	1300	1340	Maximum -ve G -1.5G	2000	120	2000	130
9999	8	1350	1400	-1.5G	2000	130	2000	130
9999	8	1410	1500	Inverted Flight (Power to Idle)	2100	148		
9999	8	1520	1580	Stabilized 0G	2070	130		160
9999	8	1775	1875	3G pull Up to Vertical Climb	4500	85	3900	120
Tape 2								
9999	6	0	330	Return to Base, Circuit and Landing	4000	120		
9999	7	0	40	Ground Run and Calibration				

Flight 7 14/07/78 1225 Full Fuel Mission 1

Base: Edinburgh

Pilot: F/L J Foley

Weather:

FM:

Fuel Used: 32 l.

Known Faults as for flight 1

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	127	Take-off and Climb Out				
9999	3	20	60	Instructor Wing Over Left	4000	120		
9999	3	65	100	Student Wing Over Left	4050	125		
9999	3	110	160	Instructor Wing Over Right	3930	120		
9999	3	175	215	Student Wing Over Right	3800	130	3750	120
9999	3	220	325	Instructor Idle Power Stall	3800		3690	
9999	3	330	345	Repositioning Turn Left				
9999	3	350	440	Student Idle Power Stall	3850	120		
9999	3	450	500	Instructor Wing Over Left	3770	120		
9999	3	500	550	Student Wing Over Right	3800	120		
9999	3	600	675	Instructor Take-off Flap Stall		80		
9999	3	680	750	Student Take-off Flap Stall		80		
9999	3	775	820	Instructor Wing Over Left	4500	120		
9999	3	825	875	Student Wing Over Left				
9999	3	880	925	Instructor Wing Over Right				
9999	3	930	970	Student Wing Over Right	4200	124	4000	120
9999	3	975	1100	Instructor Full Flap Stall	4000	120		
9999	3	1115	1150	Repositioning Turn				
9999	3	1150	1225	Student Full Flap Stall				
9999	3	1230	1325	Instructor Full Flap Stall				
9999	3	1330	1715	Turning Back to Base, Descent to 1800 ft.				
9999	4	0	475	Circuit, Touch and Go				
9999	4	475	682	Circuit, Full Stop				
Tape 2								
9999	3	0	360	Taxiing, Ground Run and Calibration				

Flight 8 14/07/78 1400 Full Fuel Mission 2

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1017

FM: U/S

Fuel Used: 63 l.

Known Faults as for flight 1

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	9999	Ground Run and Calibration				
9999	2	0	410	Take-off and Touch and Go				
9999	3	20	75	Instructor Wing Over Left	5000	120		
9999	3	90	140	Student Wing Over Left				
9999	4	5	125	Instructor Spin Right	8000		6500	85
9999	5	25	125	Instructor Spin Left	8000		5800	110
9999	6	5	75	Student Spin Right	8000	100	6300	100
9999	6	75	120	Instructor Nose High U/A	6500			
9999	6	125	175	Student Nose High U/A				
9999	6	175	225	Student Nose Low U/A				
9999	6	225	270	Repositioning Turn Right				
9999	6	275	325	Instructor Nose Low U/A				
9999	6	330	380	Instructor Vertical U/A				
9999	6	385	425	Student Vertical U/A				
9999	6	430	475	Instructor Wing Over Left	5000			
9999	6	480	525	Student Wing Over Left				
9999	6	530	570	Instructor Wing Over Right				
9999	6	575	620	Student Wing Over Right				
9999	6	625	1100	Instructor General Flying				
9999	6	1100	1677	Standard Rejoin, Circuit and Full Stop				
Tape 2								
9999	1	0	50	End of Landing				
9999	2	0	30	Ground Run and Calibration				

Flight 9 17/07/78 0930 Full Fuel Mission 3

Base: Edinburgh

Pilot: F/L J Foley

Weather:

FM: U/S

Fuel Used:

Known Faults as for flight 1

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	35	Ground Run and Calibration				
9999	2	0	150	Take-off				
9999	2	150	440	Circuit, Touch and Go				
9999	3	25	70	Instructor Wing Over Left	4000	123		
9999	3	75	110	Student Wing Over Right		134		
9999	3	115	175	Instructor Loop from LH Descending Turn	4350	120		
9999	3	180	240	Student Loop from RH Descending Turn	3500	120		
9999	3	270	310	Instructor Wing Over Left	3450	140	3150	125
9999	3	370	420	Instructor Loop from RH Descending Turn			2700	130
9999	3	425	480	Student Loop			2430	127
9999	4	10	65	Student Slow Roll Left	5000	118	4800	115
9999	4	75	125	Instructor Slow Roll Right			4870	115
9999	4	130	180	Instructor Loop from LH Descending Turn			4280	135
9999	4	185	250	Student Loop from RH Descending Turn			3800	
9999	4	260	320	Instructor Idle Power Stall				
9999	4	325	375	Student Idle Power Stall				
9999	4	380	500	Instructor Full Flap Stall	3670	100		
9999	4	505	620	Student Full Flap Stall				90
9999	4	625	675	Instructor Turning Stall Right				
9999	4	680	740	Student Turning Stall Left				
9999	5	25	70	Flick Roll				
9999	5	75	125	Flick Roll				
9999	6	0	110	Practice Forced Landing (Aborted)				
9999	7	0	245	Practice Forced Landing to Full Stop				
9999	8	0	35	Ground Run and Calibration				

Flight 10 28/04/80 Low level Full Fuel Envelope Flight

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1032 Light Southerly

FM: 28048000240030000004030002000 1 4 18 3 1 0 0 1.2

Fuel Used: unknown

Known Faults Engine RPM-Intermittent

Channel 14- U/S

Altitude/Airspeed Reversed

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	40	Ground Run and Calibration for 27/04/80				
9999	2	0	20	Ground Run for 27/04/80				
9999	3	0	25	Ground Run for 27/04/80				
9999	4	0	105	Ground Run for 28/04/80				
9999	5	0	135	Taxiing Right Turn, Left Turn, Right Turn, Left Turn				
9999	6	0	105	Take-off, Climb Out				
9999	7	0	75	2G Left Turn (Too Slow - Near Stall)	2000	85	1800	
9999	8	10	70	2G Left Turn	2000	100		90
9999	8	75	150	2G Right Turn	2000	100		100
9999	8	155	220	Increasing Speed 2770 RPM 26"	2000	100	2000	140
9999	8	225	325	2G Left Turn	2000	140	2000	120
9999	8	350	425	2G Right Turn	2000	140	2000	110
9999	8	500	600	3G Pitch Up	2000	135	1800	
9999	8	650	750	-1G Pitch Down then 3G pitch Up	2450	90	1900	100
9999	8	755	850	Flat Turn Left though 270 deg	1940	100	1900	100
9999	8	875	975	Flat Turn Right through 270 deg	1900	100	2050	80
9999	8	980	995	Accelerating 26" 2600RPM 85 lb/hr	2000	80	2000	120
9999	8	1000	1050	Max Rate Turn Left	2000	120		100
9999	8	1060	1125	Max Rate Turn Right	2080	120		
9999	8	1150	1225	5.5G Pull Up at 170 Kts	2070	120	1500	110
9999	8	1300	1340	Maximum -ve G -1.5G	2000	120	2000	130
9999	8	1350	1400	-1.5G	2000	130	2000	130
9999	8	1410	1500	Inverted Flight (Power to Idle)	2100	148		
9999	8	1520	1580	Stabilized 0G	2070	130		160
9999	8	1775	1875	3G pull Up to Vertical Climb	4500	85	3900	120
Tape 2								
9999	6	0	330	Return to Base, Circuit and Landing	4000	120		
9999	7	0	40	Ground Run and Calibration				

Flight 12 29/04/80 Full Fuel Mission 1

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1030

FM: 2904800024003000000402000200 0 0 0 5 0 0 0 0 1.0

Fuel Used: 40 l.

Known Faults Engine RPM-Intermittent

Channel 45-Zero Signal Level Jumps

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	127	Take-off and Climb Out				
9999	3	20	60	Instructor Wing Over Left	4000	120		
9999	3	65	100	Student Wing Over Left	4050	125		
9999	3	110	160	Instructor Wing Over Right	3930	120		
9999	3	175	215	Student Wing Over Right	3800	130	3750	120
9999	3	220	325	Instructor Idle Power Stall	3800		3690	
9999	3	330	345	Repositioning Turn Left				
9999	3	350	440	Student Idle Power Stall	3850	120		
9999	3	450	500	Instructor Wing Over Left	3770	120		
9999	3	500	550	Student Wing Over Right	3800	120		
9999	3	600	675	Instructor Take-off Flap Stall		80		
9999	3	680	750	Student Take-off Flap Stall		80		
9999	3	775	820	Instructor Wing Over Left	4500	120		
9999	3	825	875	Student Wing Over Left				
9999	3	880	925	Instructor Wing Over Right				
9999	3	930	970	Student Wing Over Right	4200	124	4000	120
9999	3	975	1100	Instructor Full Flap Stall	4000	120		
9999	3	1115	1150	Repositioning Turn				
9999	3	1150	1225	Student Full Flap Stall				
9999	3	1230	1325	Instructor Full Flap Stall				
9999	3	1330	1715	Turning Back to Base, Descent to 1800 ft.				
9999	4	0	475	Circuit, Touch and Go				
9999	4	475	682	Circuit, Full Stop				
Tape 2								
9999	3	0	360	Taxiing, Ground Run and Calibration				

Flight 13 30/04/80 1130 Full Fuel Mission 2

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1030

FM: 3004800024003000000402000200 0 3 3 27 12 1 0 0 1.2

Fuel Used: 70 l.

Known Faults Engine RPM-Intermittent

Channel 43- Overloads in Spins

Channel 45- Zero Signal Level Jumps

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	9999	Ground Run and Calibration				
9999	2	0	410	Take-off and Touch and Go				
9999	3	20	75	Instructor Wing Over Left	5000	120		
9999	3	90	140	Student Wing Over Left				
9999	4	5	125	Instructor Spin Right	8000		6500	85
9999	5	25	125	Instructor Spin Left	8000		5800	110
9999	6	5	75	Student Spin Right	8000	100	6300	100
9999	6	75	120	Instructor Nose High U/A	6500			
9999	6	125	175	Student Nose High U/A				
9999	6	175	225	Student Nose Low U/A				
9999	6	225	270	Repositioning Turn Right				
9999	6	275	325	Instructor Nose Low U/A				
9999	6	330	380	Instructor Vertical U/A				
9999	6	385	425	Student Vertical U/A				
9999	6	430	475	Instructor Wing Over Left	5000			
9999	6	480	525	Student Wing Over Left				
9999	6	530	570	Instructor Wing Over Right				
9999	6	575	620	Student Wing Over Right				
9999	6	625	1100	Instructor General Flying				
9999	6	1100	1677	Standard Rejoin, Circuit and Full Stop				
Tape 2								
9999	1	0	50	End of Landing				
9999	2	0	30	Ground Run and Calibration				

Flight 14 01/05/80 Full Fuel Mission 3

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1032 Light Southerly, 6/8 St. Cu. 5000 ft.

FM: 0105800024003000000402000200 0 0 3 42 12 2 0 0 1.2

Fuel Used: 70 l.

Known Faults Engine RPM-Intermittent

Calibration File: No Gain on Channel 43 changed before Flight

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	35	Ground Run and Calibration				
9999	2	0	150	Take-off				
9999	2	150	440	Circuit, Touch and Go				
9999	3	25	70	Instructor Wing Over Left	4000	123		
9999	3	75	110	Student Wing Over Right		134		
9999	3	115	175	Instructor Loop from LH Descending Turn	4350	120		
9999	3	180	240	Student Loop from RH Descending Turn	3500	120		
9999	3	270	310	Instructor Wing Over Left	3450	140	3150	125
9999	3	370	420	Instructor Loop from RH Descending Turn			2700	130
9999	3	425	480	Student Loop			2430	127
9999	4	10	65	Student Slow Roll Left	5000	118	4800	115
9999	4	75	125	Instructor Slow Roll Right			4870	115
9999	4	130	180	Instructor Loop from LH Descending Turn			4280	135
9999	4	185	250	Student Loop from RH Descending Turn			3800	
9999	4	260	320	Instructor Idle Power Stall				
9999	4	325	375	Student Idle Power Stall				
9999	4	380	500	Instructor Full Flap Stall	3670	100		
9999	4	505	620	Student Full Flap Stall				90
9999	4	625	675	Instructor Turning Stall Right				
9999	4	680	740	Student Turning Stall Left				
9999	5	25	70	Flick Roll				
9999	5	75	125	Flick Roll				
9999	6	0	110	Practice Forced Landing (Aborted)				
9999	7	0	245	Practice Forced Landing to Full Stop				
9999	8	0	35	Ground Run and Calibration				

Flight 15 02/05/80 1215 Full Fuel Mission 4

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1030 Fine Light North Easterly

FM: 02058000240030000004020002000 0 1 2 5 0 0 0 0 1.0

Fuel Used: 40 l.

Known Faults Engine RPM-Intermittent

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	30	Ground Run and Calibration				
9999	2	0	150	Short Take-off				
9999	2	150	360	Circuit, Short Landing				
9999	2	360	490	Normal Take-off				
9999	3	10	75	Loop				
9999	3	80	120	Instructor Slow Roll				
9999	3	125	170	Student Slow Roll				
9999	3	175	225	Instructor Idle Power Stall				
9999	3	230	275	Student Idle Power Stall				
9999	3	275	380	Instructor Land Flap Stall				
9999	3	390	510	Student Land Flap Stall				
9999	3	515	530	Repositioning Turn Left				
9999	3	535	625	Instructor Steep Turn Left only approx. 2G				
9999	3	630	720	Student Steep Turn Right				
9999	4	0	350	Practice Forced Landing Touch and Go				
9999	4	355	625	Low Level Circuit Touch and Go				
9999	4	630	900	Flapless Circuit and Full Stop				
9999	5	0	35	Ground Run and Calibration				

Flight 16 05/05/80 Full Fuel Mission 5

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1022 27C Fine Cloud to North 310/10-15

FM: 0505800024003000000402000200 0 0 0 13 0 0 0 0 0.7

Fuel Used: 40 l.

Known Faults Engine RPM-Intermittent

Flaps jammed 3/4 Down After Last Landing

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	35	Ground Run and Calibration				
9999	2	0	185	Take-off				
9999	3	10	80	Wing Over Left	5000	115		
9999	3	85	140	Wing Over Right				
9999	3	145	200	Intructor Stall Turn Right from RH Descending Turn 12 5				
9999	3	205	260	Student Stall Turn Right from RH Desc. Turn 123				
9999	3	265	310	Student Stall Turn Left from LH Desc. Turn (flicked out)				
9999	3	315	350	Wing Over Left				
9999	3	350	390	Wing Over Right				
9999	3	395	445	Instructor Stall Turn Left from LH Desc. Turn				
9999	3	450	500	Student Stall Turn Right from RH Desc Turn 130				
9999	3	500	1065	Return to Base, Left Initial and Pitch (Rnw 36 - light continuous turbulence				
9999	4	0	40	Ground Run and Calibration				

Flight 17 05/05/80 1545 Full Fuel Mission 6

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1017 19C Calm Overcast 9000 Rain in Area

FM: 0605800024003000000402000100 0 0 0 19 8 2 0 0 0.8

Fuel Used: 40 l. (includes Engine Test Run Before Flight)

Known Faults Engine RPM-Intermittent

Flap Position - U/S

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	40	Ground Run and Calibration				
9999	2	0	125	Take-off				
9999	3	10	70	Stall Turn Right from LH Desc. Turn	7000			
9999	3	75	130	Stall Turn Left from RH Desc. Turn				
9999	3	200	275	Roll Off the Top				
9999	3	280	340	Student Roll Off the Top				
9999	3	345	410	Idle Power Stall				
9999	3	415	510	Land Flap Stall				
9999	3	515	535	Repositioning Turn Right				
9999	3	540	590	Instructor Barrel Roll Right from LH Desc. Turn				
9999	3	600	645	Student Barrel Roll Left from RH desc. Turn	124			
9999	3	650	690	Stall Turn Left				126
9999	3	700	745	Instructor Roll Off the Top				
9999	3	750	800	Student Roll Off the Top				
9999	3	810	860	Instructor Barrel Roll Left from RH Desc. Turn				
9999	3	865	910	Student Barrel Roll Right from LH Desc. Turn				
9999	3	915	950	Instructor Break Turn Right				
9999	3	955	995	Student Break Turn Left				
9999	3	1000	1060	Sustained Max Rate Turn Right				
9999	3	1065	1125	Climbing	1000		1500	
9999	3	1130	1560	Return to Base and Landing	1500			
9999	4	0	10	End of Landing				
9999	5	0	45	Ground Run and Calibration				

Flight 18 07/05/80 0955 High Level Full Fuel Envelope Flight

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1015 20C 320/15 Rnw 36 Fine St Cu 3000-5000

FM: 0705800024003000000402000100 0 1 2 11 4 2 0 0 1.7

Fuel Used: 130 l. (includes Flight 19)

Known Faults Engine RPM-Intermittent

Flap Position - U/S

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	55	Ground Run and Calibration				
9999	2	0	135	Take-off				
9999	3	10	60	2G Left Turn	8000	100		82
9999	3	65	120	2G Right Turn	8000	100		85
9999	3	130	190	Increasing Speed				
9999	3	200	260	2G Left Turn	8000	112		90
9999	3	300	370	2G Right Turn	8000	112		85
9999	3	425	510	3G Pull Up (Stalled with 90 deg bank)	8000	111		
9999	4	10	125	3G Pull Up (Stalled backwards)	10000	100		
9999	4	140	210	-1G at 185 Kts	8000	106	7120	103
9999	5	20	130	Flat Turn Left	8000	110		95
9999	5	140	220	Repositioning Turn Right				
9999	5	230	320	Flat Turn Right	8000	110	7980	79
9999	5	330	430	Repositioning Turn Left				
9999	5	440	510	Max Rate Turn Left (Stalled)			7500	85
9999	6	25	125	8000 Ft 5G (Near Stall - out Left)	10000	100	8000	120
9999	6	140	250	-2.2G then Pull Up			7700	85
9999	7	20	125	Sustained 0G then 2.5G Pull Up	8000	100	6500	
9999	7	130	200	Climbing 85 Kts				
9999	8	20	175	8000 180Kts Vertical then over top	10000	100	7700	
Tape 2								
9999	4	10	120	Spin to Right	10000	95	5700	108
9999	4	125	625	Back to Base 12-15" 1000/Min Landing	5000	120		
9999	5	0	50	Ground Run and Calibration				

Flight 19 07/05/80 Low Level Half Fuel Envelope Flight

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1015 21C 260/10-15 Rnw 36 Fine

FM: 0705800023002000000402000100 0 1 2 11 4 2 0 0 0.7

Fuel Used: 130 l. (includes Flight 18)

Known Faults Engine RPM-Intermittent

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	40	Ground Run and Calibration				
9999	2	0	125	Take-off				
9999	3	10	60	2G Left Turn	2000	100		85
9999	3	65	125	2G Right Turn	2000	100		100
9999	3	130	170	Increasing Speed	2000	100	2000	132
9999	3	175	240	2G Left Turn	2000	132		
9999	3	250	325	2G Right Turn	2000	135		118
9999	3	330	395	3G Pull Up then into Loop	2000	130	2000	120
9999	3	400	440	-1G	2000	120	1000	125
9999	3	445	560	Pulling Up into Climb			2000	127
9999	3	565	645	Flat Turn Left			1900	
9999	3	650	730	Flat Turn Right	1950	124		
9999	3	735	825	Max Rate Turn Left (into buffet)			1550	
9999	3	830	940	Climbing to 3100				
9999	3	950	1030	2000 160 Kts 5G (into buffet)	3100		2000	130
9999	3	1030	1100	-2.0G			1350	
9999	3	1105	1220	Climbing Turn Right				
9999	3	1225	1325	Sustained 0G			1000	
9999	3	1330	1540	Straight Climb then Left turn			3000	
9999	3	1550	1640	2000 Vertical (fell out nose forward)				
9999	3	1800	2070	Entry to Circuit (Non-Standard)				
9999	4	0	40	Ground Run and Calibration				

Flight 20 08/05/80 1115 Full Fuel Mission 8 (U/C) Flight

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1023 Calm Runway 36

FM: 0805800024003000000402000100 0 0 0 0 0 0 0 0 1.0

Fuel Used: 90 l. (includes Flight 21)

Known Faults Engine RPM-Intermittent

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	55	Ground Run and Calibration				
9999	2	0	50	Take-off				
9999	2	50	250	Circuit				
9999	2	250	350	Touch and Go Runway 36 (bitumen)				
9999	2	350	525	Circuit				
9999	2	525	565	Touch and Go Runway 04 (grass)				
9999	3	0	25	End of Touch and Go				
9999	3	25	275	Circuit				
9999	3	275	355	Full Stop Landing on 36				
9999	3	355	425	Normal Take-off				
9999	3	425	650	Flapless Circuit				
9999	3	650	750	Flapless Touch and Go on 36				
9999	3	750	925	Flapless Circuit				
9999	3	925	1025	Flapless Touch and Go on 04				
9999	3	1025	1275	Flapless Circuit				
9999	3	1275	1320	Flapless Full Stop Landing on 36				
9999	3	1330	1375	Normal Take-off				
9999	3	1375	1550	Glide Circuit				
Tape 2								
9999	1	0	75	Touch and Go on 36				
9999	1	75	240	Glide Circuit				
9999	1	240	325	Touch and Go on 04				
9999	1	325	525	Glide Circuit				
9999	1	525	610	Full Stop Landing on 36				
9999	1	610	675	Short field Take-off on 36				
9999	1	675	900	Circuit				
9999	1	900	950	Short field Full Stop Landing 36				
9999	1	950	1025	Short field Take-off				
9999	1	1025	1175	Circuit				
9999	1	1175	1215	Short field Full Stop Landing on 04				
9999	2	0	40	Ground Run and Calibration				

Flight 21 08/05/80 Half Fuel Mission 7A (Instructor Continuation Training Flight)

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1020 22C 210/5-10 Fine

FM: 0805800023002000000402000100 0 7 15 28 11 1 0 0 0.8

Fuel Used: 90 l. (includes Flight 20)

Known Faults Engine RPM-Intermittent

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	60	Ground Run and Calibration				
9999	2	0	100	Take-off				
9999	3	0	45	End of Take-off				
9999	4	50	800	Continuation Training	10000		1500	
9999	4	805	1010	Straight in Approach Runway 22, Landing				
9999	5	0	40	Ground Run and Calibration				

Flight 22 14/05/80 Full Fuel Mission 7B (Turbulence Search and Low Flying)

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1027 17C 080/10 Fine High Cloud

FM: 150580002400300000040200010 0 0 0 0 0 0 0 0 1.3

Fuel Used: unknown

Known Faults Engine RPM-Intermittent

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	50	Ground Run and Calibration				
9999	2	0	120	Take-off and Climb Out				
9999	3	0	1250	Turbulence Light occ. Moderate, Right Turn 2/3 way Through				
9999	4	0	1100	Procedural Low Flying - Flat Country	200			
9999	5	0	410	Normal Circuit				
9999	5	410	475	Landing				
9999	6	0	45	Ground Run and Calibration				

Flight 23 04/06/80 0930 Full Fuel Mission 1

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH 1022 11C Wind Light and Variable

FM: 0406800024003000000402000200 0 0 0 0 0 0 0 0 1.0

Fuel Used: 40 1.

Known Faults None

Calibration File: No (Altitude and Air Speed back to Correct Channels)

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	30	Ground Run and Calibration				
9999	2	0	110	Take-off to 1000 ft				
9999	3	10	25	Instructor Wing Over Left	5000			
9999	3	25	80	Student Wing Over Left				
9999	3	80	115	Instructor Wing Over Right				
9999	3	115	150	Student Wing Over Right				
9999	3	150	210	Instructor Idle Power Stall				
9999	3	210	260	Student Idle Power Stall				
9999	3	260	295	Instructor Wing Over Left				
9999	3	295	330	Student Wing Over Left				
9999	3	330	375	Student Wing Over Right				
9999	3	375	470	Instructor Take-off Flap Stall				
9999	3	470	530	Student Take-off Flap Stall				
9999	3	530	590	Climb				
9999	3	590	612	Instructor Wing Over Left	6000			
9999	3	612	635	Student Wing Over Left				
9999	3	635	660	Instructor Wing Over Right				
9999	3	660	700	Student Wing Over Right				
9999	3	700	790	Instructor Land Flap Stall				
9999	3	790	875	Student land Flap Stall				
9999	3	875	1000	Instructor Land Flap Stall				
9999	3	1000	1300	Standard Rejoin and Circuit	5500			
9999	3	1300	1400	Touch and Go				
9999	3	1400	1550	Normal Circuit				
9999	3	1550	1680	Full Stop Landing				
9999	4	0	30	Ground Run and Calibration				

Flight 24 04/06/80 1430 Full Fuel Mission 3

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH 1022 Wind 5 kts S.W. 3/8 Cloud 3000

FM: 0406800024003000000402000200 0 0 3 13 2 0 0 0 1.0

Fuel Used: 50 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	50	IF Take-off				
9999	2	50	225	Circuit		100		
9999	2	225	300	Flapless Touch and Go				
9999	2	300	360	Climb Out				
9999	3	10	30	Instructor Wing Over Left				
9999	3	30	60	Student Wing Over Right				
9999	3	65	120	Instructor Loop				
9999	3	120	200	Climb				
9999	3	200	250	Student Loop				
9999	4	10	30	Instructor Wing Over				
9999	4	30	50	Student Wing Over				
9999	4	50	100	Instructor Loop				
9999	4	100	170	Student Loop				
9999	4	170	240	Student Slow Roll	3000	125		
9999	4	240	290	Instructor Slow Roll Left				
9999	4	290	360	Instructor Slow Roll Right				
9999	5	0	60	Instructor Loop	3000	140		
9999	5	60	140	Student Loop				
9999	5	140	220	Instructor Idle Power Stall				
9999	5	220	290	Student Idle Power Stall				
9999	5	300	375	Instructor Land Flap Stall				
9999	5	375	480	Student Land Flap Stall				
9999	5	520	560	Instructor Turning Stall				
9999	5	560	585	Student Turning Stall Right				
9999	5	565	620	Student Turning Stall Left				
9999	6	0	210	Return to Base, Circuit and Landing				
9999	7	0	30	Ground Run and Calibration				
9999	8	0	65	Bad File				

Flight 26 05/06/80 1445 Full Fuel Mission 4

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH 1021 Overcast Cu 3000

FM: 0506800024003000000402000400 0 0 2 6 0 0 0 0 1.0

Fuel Used: 45 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	20	Ground Run and Calibration				
9999	2	0	50	Short field Take-off				
9999	2	50	200	Circuit				
9999	2	200	275	Aborted Landing (Runway Obstructed)				
9999	3	0	120	Full Stop Landing				
9999	3	120	230	Normal Take-off				
9999	4	0	50	Instructor Turning Stall Left (Aborted - Stalled)				
9999	5	0	70	Instructor Turning Stall Left				
9999	5	70	105	Student Turning Stall Right				
9999	6	5	60	Loop?				
9999	6	60	115	Instructor Slow Roll Left				
9999	6	115	165	Student Slow Roll Right				
9999	6	165	225	Instructor Idle Power Stall				
9999	6	225	280	Student Idle Power Stall				
9999	6	280	360	Instructor Land Flap Stall				
9999	6	360	455	Student Land Flap Stall				
9999	7	0	150	Practice Forced Landing				
9999	7	150	200	Touch and Go				
9999	7	200	325	Low Level Circuit				
9999	7	325	400	Touch and Go				
9999	7	400	550	Circuit				
9999	7	550	675	Full Stop Landing on 22. Ground Run and Calibration				

Flight 27 06/06/80 0915 Full Fuel Mission 6

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH 1019 Wind 040/5 2/8 Cloud 3000-6000

FM: 0606800024003000000402000100 0 0 0 18 7 0 0 0 0.7

Fuel Used: 60 l. (includes Flight 28)

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	20	Ground Run and Calibration				
9999	2	0	130	Take-off and Climb Out				
9999	3	10	46	Instructor Stall Turn Right	5000			
9999	3	46	68	Stall Turn Left				
9999	3	68	110	Roll off the Top				
9999	3	110	140	Roll off the Top				
9999	4	0	50	Student Idle Power Stall				
9999	4	50	110	Student Land Flap Stall				
9999	4	110	175	Climb to 4000				
9999	4	175	220	Instructor Barrel Roll Right	4000			
9999	4	220	260	Student Barrel Roll Left				
9999	4	260	310	Instructor Stall Turn				
9999	4	310	350	Instructor Roll off the Top				
9999	4	350	390	Student Roll off the Top				
9999	4	390	430	Instructor Barrel Roll Left				
9999	4	430	470	Student Barrel Roll Right				
9999	4	470	510	Break Turn				
9999	4	510	530	Break Turn				
9999	4	530	550	Sustained Max Rate Turn?				
9999	4	550	620	Return to Base				
9999	5	0	150	Standard Rejoin, Normal Circuit				
9999	5	150	250	Full Stop Landing				
9999	5	250	360	Taxiing on Short Grass (Bumpy), Ground Run				

Flight 28 06/06/80 1140 Full Fuel Mission 5

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH 1018 Wind 010/8 Overcast High Level Cloud

FM: 0606800024003000000402000100 0 0 0 7 0 0 0 0 0.5

Fuel Used: 60 l. (includes Flight 27)

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	145	Take-off and Climb Out to 1000				
9999	3	5	20	Student Wing Over Right				
9999	3	20	40	Wing Over Left				
9999	3	40	75	Instructor Stall Turn Right				
9999	3	75	95	Instructor Stall Turn Right				
9999	3	95	115	Student Stall Turn Left				
9999	3	115	140	Wing Over Left				
9999	3	140	175	Wing Over Right				
9999	3	180	235	Climb?				
9999	3	235	275	Instructor Stall Turn Left				
9999	3	275	295	Student Stall Turn Right				
9999	3	295	325	Wing Over Left				
9999	3	325	390	Return to Base				
9999	4	0	200	Initial and Pitch, Normal Circuit				
9999	4	200	350	Full Stop Landing				
9999	4	350	425	Taxiing on Grass Runway				
9999	4	425	460	Ground Run and Calibration				

Flight 29 09/06/80 1000 Full Fuel Mission 8 (Undercarriage)

Base: Edinburgh

Pilot: S/L D Knights

Weather: QNH ? 15C Wind 360/5 Clear

FM: 0906800024003000000402001200 0 0 0 0 0 0 0 0 1.0

Fuel Used: unknown

Known Faults Channel 44- Overloads

Channel 45- Overloads

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	75	Normal Take-off				
9999	2	75	225	Circuit				
9999	2	225	300	Normal Full Stop Landing				
9999	2	300	375	Normal Take-off				
9999	2	375	525	Circuit				
9999	2	525	600	Normal Touch and Go				
9999	3	0	50	Normal Touch and Go				
9999	4	0	47	Flapless Full Stop				
9999	4	47	145	Normal Take-off				
9999	5	0	35	Flapless Touch and Go				
9999	6	0	45	Flapless Touch and Go				
9999	7	0	60	Practice Forced Landing Touch and Go				
9999	8	0	37	Practice Forced Landing Touch and Go				
9999	9	0	45	Practice Forced Landing Full Stop				
9999	9	45	80	Normal Take-off				
9999	10	0	60	Short field Touch and Go				
9999	11	0	40	Short field Full Stop				
9999	11	40	82	Take-off				
9999	12	0	65	Short field Full Stop				
9999	12	65	150	Taxiing				
9999	12	150	165	Ground Run and Calibration				

Flight 30 10/06/80 0940 Half Fuel Mission 1

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1021 12C Wind 210/10-15 2/8 St Cu 1000-2000

FM: 10068000220020000004020002000 0 0 1 9 0 0 0 0 0.7

Fuel Used: 40 l.

Known Faults True Air Speed- U/S

Engine RPM- U/S

Engine Fuel Flow- U/S

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	20	Ground Run				
9999	2	0	110	Take-off				
9999	3	0	20	Instructor Wing Over Left				
9999	3	20	50	Student Wing Over Left				
9999	3	50	75	Instructor Wing Over Right				
9999	3	75	100	Student Wing Over Right				
9999	3	100	125	Instructor Wing Over Left				
9999	3	125	160	Instructor Idle Power Stall				
9999	3	160	185	Student Wing Over Right				
9999	3	185	225	Student Idle Power Stall				
9999	3	260	290	Instructor Wing Over Left				
9999	3	290	325	Instructor Take-off Flap Stall				
9999	3	325	355	Student Wing Over Right				
9999	3	355	390	Student Take-off Flap Stall				
9999	4	0	27	Instructor Wing Over Left				
9999	4	27	38	Student Wing Over Left				
9999	4	38	55	Instructor Wing Over Right				
9999	4	55	75	Student Wing Over Right				
9999	4	75	100	Instructor Wing Over				
9999	4	100	160	Instructor Full Flap Stall				
9999	4	160	190	Student Wing Over				
9999	4	190	245	Student Full Flap Stall				
9999	5	0	160	Instructor Continuation Training				
9999	6	0	200	3 Mile Initial				
9999	6	200	325	Touch and Go				
9999	6	325	400	Circuit				
9999	6	400	525	Full Stop Landing				
9999	6	525	550	Taxiing on Grass				
9999	32	0	135	Taxiing on Taxiway, Ground run and calibration				

Flight 31 10/06/80 1230 Half Fuel Mission 2

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1021 14C Wind 240/10 3/8 Cu 3000-7000

FM: 10068000220020000040200020 0 0 0 18 5 0 0 0 0.9

Fuel Used: 50 l.

Known Faults Channel 43- Overload in 1 Spin

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	120	Take-off				
9999	3	10	35	Instructor Wing Over Left				
9999	3	35	50	Student Wing Over Left				
9999	3	50	120	Instructor Spin Left				
9999	4	0	20	Student Wing Over				
9999	4	20	60	Instructor Spin Right				
9999	5	0	20	Student Wing Over Left				
9999	5	20	65	Student Spin Right				
9999	6	5	60	Instructor Vertical U/A				
9999	6	60	115	Student Vertical U/A				
9999	6	115	150	Instructor Nose Low U/A				
9999	6	150	190	Student Nose Low U/A				
9999	6	190	230	Instructor Nose High U/A				
9999	6	230	265	Student Nose High U/A				
9999	7	5	30	Instructor Wing Over Left				
9999	7	30	55	Student Wing Over Left				
9999	7	55	75	Instructor Wing Over Right				
9999	7	75	100	Student Wing Over Right				
9999	8	0	150	Return to Base				
9999	8	150	275	Touch and Go				
9999	8	275	350	Low Level Circuit				
9999	8	350	570	Full Stop Landing				
9999	8	570	585	Ground Run and Calibration				

Flight 32 11/06/80 1500 Half Fuel Mission 3

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1025 Wind 250/5 Clear

FM: 1106800022002000000402000300 0 0 2 24 7 0 0 0 0.8

Fuel Used: 40 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	5	Ground Run				
9999	1	5	150	Take-off				
9999	2	0	50	Flapless Circuit				
9999	2	50	175	Flapless Touch and Go				
9999	2	175	215	Climb Out				
9999	3	0	25	Instructor Wing Over Left				
9999	3	25	45	Student Wing Over Right				
9999	3	45	65	Instructor Loop				
9999	3	65	100	Instructor Loop				
9999	3	100	160	Student Loop				
9999	3	165	187	Instructor Wing Over Left				
9999	3	187	210	Student Wing Over Right				
9999	3	210	245	Instructor Loop				
9999	3	245	300	Student Loop				
9999	3	300	340	Student Slow Roll Left				
9999	3	340	375	Instructor Slow Roll Right				
9999	3	375	420	Climbing				
9999	3	420	435	Instructor Wing Over				
9999	3	435	462	Instructor Loop				
9999	3	462	487	Student Wing Over Left				
9999	3	487	512	Student Loop				
9999	4	0	20	Instructor Wing Over Right				
9999	4	20	35	Instructor Wing Over Left				
9999	4	35	75	Instructor Idle Power Stall				
9999	4	75	90	Student Wing Over Left				
9999	4	90	130	Student Idle Power Stall				
9999	4	130	160	Instructor Wing Over Left				
9999	4	160	200	Instructor Take-off Flap Stall				
9999	4	200	225	Student Wing Over Left				
9999	4	225	300	Student Take-off Flap Stall				
9999	4	300	330	Instructor Turning Stall				
9999	4	330	370	Student Turning Stall				
9999	5	0	125	Continuation Training				
9999	6	0	165	Short field Landing from High Key				
9999	6	165	200	Take-off				
9999	6	200	350	Practice Forced Landing, Touch and Go				
9999	6	350	500	Glide Circuit				
9999	6	500	575	Full Stop Landing				
9999	6	575	610	Ground Run				

Flight 33 12/06/80 0915 Half Fuel Mission 4

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1029 Wind Calm 5/8 St Cu 2500-3500

FM: 120680002200200000402000400 0 0 3 16 8 1 0 0 0.8

Fuel Used: 40 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	1	25	75	Normal Take-off				
9999	1	75	225	Circuit				
9999	1	225	310	Short field Full Stop Landing				
9999	1	310	425	Instrument Take-off and Climb Out				
9999	2	10	70	Instructor 3G Steep Turn Left		130		
9999	2	70	125	Student 3G Steep Turn Right				
9999	2	125	150	Instructor Wing Over Right				
9999	2	150	180	Instructor Loop				
9999	2	180	225	Instructor Slow Roll Left				
9999	2	226	265	Student Slow Roll Left				
9999	2	265	290	Instructor Wing Over Left				
9999	2	290	330	Instructor Idle Power Stall				
9999	2	330	360	Student Wing Over Right				
9999	2	360	400	Student Idle Power Stall				
9999	2	400	440	Instructor Wing Over Right				
9999	2	440	500	Instuctor Full Flap Stall				
9999	2	500	525	Student Wing Over Left				
9999	2	525	570	Student Full Flap Stall				
9999	3	0	130	Continuation Training				
9999	4	0	105	Continuation Training				
9999	5	0	195	Practice Forced Landing				
9999	5	195	240	Touch and Go				
9999	5	240	300	Low Level Circuit				
9999	5	300	400	Touch and Go				
9999	5	400	550	Flapless Circuit				
9999	5	550	650	Flapless Full Stop Landing				
9999	5	650	665	Ground Run				

Flight 34 12/06/80 1500 Half Fuel Mission 5

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1021 Wind 260/7 5/8 Cu 2500-7000

FM: 1206800022002000000402000200 0 0 1 12 2 0 0 0 0.7

Fuel Used: 20 l.

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	25	Ground Run				
9999	1	25	185	Take-off to 1000 ft				
9999	2	0	20	Instructor Wing Over Left				
9999	2	20	35	Instructor Wing Over Right				
9999	2	35	65	Instructor Stall Turn Right				
9999	2	65	85	Instructor Wing Over Left				
9999	2	85	115	Instructor Stall Turn Right				
9999	2	115	140	Student Wing Over Left				
9999	2	140	175	Student Stall Turn Left				
9999	2	175	200	Wing Over Left				
9999	2	200	225	Instructor Wing Over RIght				
9999	2	225	245	Instructor Stall Turn Left				
9999	2	245	268	Student Wing Over Right				
9999	2	268	300	Student Stall Turn Right (Out like a Brick)				
9999	2	300	475	Aerobatics				
9999	32	475	650	Right Initial for 18 2600RPM 26"MP		2600		132
9999	2	650	750	Touch and Go				
9999	2	750	900	Circuit				
9999	2	900	1025	Full Stop Landing				
9999	2	1025	1290	Taxiing in				
9999	3	0	10	Ground Run (Battery Cart)				

Flight 35 19/06/80 High Speed Sample Rate Flight 1

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1031 16C Wind Calm Runway 36

FM: 19068000240030000000402000200 0 2 6 26 5 0 0 0 1.0

Fuel Used: unknown

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	65	Take-off to 500 ft				
9999	2	0	55	30 deg Left Turn	2000			
9999	2	55	100	26 Steep Turn Left				
9999	2	100	162	Hard Steep Turn (to Buffet)				
9999	3	5	50	Wing Over Left	5000			
9999	3	50	95	Loop				
9999	3	95	137	Slow Roll Left				
9999	3	137	180	Barrel Roll from LH Desc Turn (not very good)				
9999	3	180	210	Barrel Roll from RH Desc Turn				
9999	3	210	255	Stall Turn Left				
9999	4	2	62	Fast Spin Right 10000				
9999	4	62	130	Idle Power Stall (Held in Stall)				
9999	4	130	262	Take-off Flap Stall (Held in Stall)				
9999	4	262	362	Full Flap Stall (Held in Stall)				
9999	4	362	407	Nose High U/A				
9999	4	407	437	Nose Low U/A				
9999	4	437	462	Vertical U/A				
9999	4	462	482	Increase to Max Speed				180
9999	4	482	680	Instructor Continuation Training				
9999	5	0	82	Right Initial Runway 18 (in Mist)	900			
Tape 2								
9999	1	0	125	Touch and Go				
9999	1	125	200	Circuit				
9999	1	200	330	Short field Landing (not much Braking)				
9999	2	0	25	Ground Run and Calibration				

Flight 36 19/06/80 Half Fuel Mission 8 (Undercarriage)

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1030 14C Wind Calm 3/8 Cloud 2000-4500

FM: 19068000220020000040200120 0 0 0 0 0 0 0 0 1.2

Fuel Used: 35 l.

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	20	Ground Run				
9999	2	0	77	Normal Take-off				
9999	3	0	200	Instructor Touch and Go				
9999	3	200	325	Circuit				
9999	3	325	450	Student Touch and Go (1.5G)				
9999	4	0	85	Instructor Touch and Go on Grass				
9999	5	0	115	Flapless Touch and Go on Grass				
9999	6	0	110	Flapless Touch and Go on Grass				
9999	7	0	120	Flapless Touch and Go on Grass				
9999	8	0	85	Practice Forced Landing Touch and Go				
9999	9	0	70	Practice forced Landing Touch and Go				
9999	10	0	55	Practice Forced Landing Touch and Go				
9999	11	0	75	Short field Full Stop				
9999	11	75	120	Short Take-off				
9999	12	0	75	Short field Full Stop				
9999	12	75	120	Short Take-off				
9999	13	0	75	Short field Full Stop				
9999	13	75	290	Taxiing (4 by Left,Right - 1 on Grass)				
9999	13	290	310	Ground Run				

Flight 37 20/06/80 Half Fuel Mission 6

Base: Edinburgh

Pilot: F/L J Foley

Weather: QNH 1032 14C Calm No significant Cloud

FM: 2006800022002000000402000100 0 0 0 15 8 0 0 0 0.6

Fuel Used: unknown

Known Faults Stbd Forward Accelerometer- U/S

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	20	Ground Run and Calibration				
9999	2	0	90	Take-off				
9999	3	0	35	Stall Turn				
9999	3	35	55	Stall Turn Left				
9999	3	55	85	Instructor Roll Off the Top				
9999	3	85	101	Student Student Roll Off the Top				
9999	3	101	110	Wing Over				
9999	3	110	140	Idle Power Stall				
9999	3	140	160	Wing Over Left				
9999	3	160	200	Land Flap Stall				
9999	3	200	230	Instructor Barrel Roll Right				
9999	3	230	245	Student Barrel Roll Left				
9999	3	245	262	Wing Over?				
9999	3	262	285	Stall Turn				
9999	3	285	315	Instructor Roll Off the Top				
9999	3	315	345	Student Roll Off the Top				
9999	3	345	360	Instructor Barrel Roll Left				
9999	3	360	390	Wing Over Right				
9999	3	390	460	Climbing				
9999	3	460	485	Student Barrel Roll Right				
9999	3	485	512	Instructor Break Turn Right				
9999	3	512	550	Student Break Turn Left				
9999	3	550	580	Sustained Max Rate Turn				
9999	4	0	170	Visual Approach and Landing on 22(grass)				
9999	4	170	350	Taxiing on Grass then Taxiway				
9999	4	350	370	Ground Run and Calibration				

Flight 38 15/07/80 1420 High Speed Sample Rate Flight 2

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1021 16C Wind 300/10 Runway 36

FM: 15078000240030000004020003000 0 6 8 23 10 2 0 0 1.0

Fuel Used: 80 l.

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	30	Ground Run and Calibration				
9999	2	0	60	Take-off to 500 ft				
9999	3	0	62	30 deg Left Turn	2000	120		
9999	3	62	112	Steep Turn Left				
9999	3	112	162	Hard Steep Turn Left (to Buffet)				
9999	3	162	187	Accelerating				
9999	3	187	230	Wing Over Left				
9999	3	230	287	Loop				
9999	3	287	337	Repositioning Right Turn				
9999	3	337	375	Slow Roll Left				
9999	3	387	425	Barrel Roll from LH Desc Turn				
9999	3	425	475	Stall Turn Left				
9999	4	25	100	Spin Left	10000			
9999	4	137	225	Idle Power Stall (Held in Stall)				
9999	4	225	375	Take-off Flap Stall (Held in Stall)				
9999	4	375	475	Full Flap Stall (Held in Stall)				
9999	4	475	515	Nose High U/A				
9999	4	515	550	Nose Low U/A				
9999	4	550	587	Getting Out of Cloud				
9999	4	587	637	Vertical U/A				
9999	4	637	650	Increase to Max Speed				180
9999	4	650	672	5G Pitch Up				
Tape 2								
9999	1	0	27	End 5G Pitch Up with Vertical U/A				
9999	2	0	255	Touch and Go on 36				
9999	3	0	125	Short field Full Stop Landing				
9999	4	0	45	Ground Run and Calibration				

Flight 39 17/07/80 1030 Airframe Overspeed Flight 1

Base: Edinburgh

Pilot: F/L T Jones

Weather:

FM: 1707800024003000000402000500 0 0 0 3 3 3 1 0 1.2

Fuel Used: unknown

Known Faults Voice Recorder Failed

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	40	Ground Run and Calibration				
9999	2	0	150	Take-off and Climb Out				
9999	3	0	100	Take-off Flap Overspeed				
9999	3	100	260	Full Flap Overspeed				
9999	4	0	70	RH Spiral Dive, Full Left Aileron				
9999	4	70	125	LH Spiral Dive, Full Right Aileron				
9999	5	0	90	Vertical Dive, Maximum G Pull Up				
9999	6	0	150	Maximum Speed Run?				
9999	6	150	300	Landing				
9999	7	0	30	Ground Run and Calibration				

Flight 40 17/07/80 1515 Half Fuel Mission 1

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1020 Wind 250/15

FM: 1707800024002000000401000200 0 0 1 1 0 0 0 0 0.8

Fuel Used: 70 1.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	27	Ground Run and Calibration				
9999	2	0	72	Take-off and Climb Out				
9999	3	5	35	Instructor Wing Over Left				
9999	3	35	62	Student Wing Over Left				
9999	3	62	100	Instructor Wing Over Right				
9999	3	100	130	Student Wing Over Right				
9999	4	2	37	Instructor Idle Power Stall				
9999	4	37	85	Student Idle Power Stall				
9999	5	2	30	Instructor Wing Over Left				
9999	5	30	60	Student Wing Over Right				
9999	6	0	50	Instructor Take-off Flap Stall				
9999	7	0	45	Student Take-off Flap Stall				
9999	8	0	25	Instructor Wing Over Left				
9999	8	25	60	Student Wing Over Left				
9999	8	60	90	Instructor Wing Over Right				
9999	8	90	125	Student Wing Over Right				
9999	9	0	22	Instructor Full Flap Stall				
9999	10	0	52	Student Full Flap Stall				
9999	11	0	105	Instructor Full Flap Stall				
9999	12	0	427	Return to Base	4000	100		
Tape 2								
9999	1	0	62	Touch and Go?				
9999	2	0	32	Ground Run and Calibration				

Flight 41 18/07/80 1030 Half Fuel Mission 2

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1027 Wind 140/5-10 Mild Turbulence

FM: 18078000240020000000401000200 0 0 2 8 2 0 0 0 0.8

Fuel Used: 25 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	27	Ground Run and Calibration				
9999	2	0	25	Take-off				
9999	2	25	200	Circuit				
9999	2	200	312	Touch and Go				
9999	3	0	30	Instructor Wing Over Left				
9999	3	30	62	Student Wing Over Left				
9999	3	62	112	Instructor Spin Right				
9999	4	0	50	Instructor Spin Left				
9999	5	0	45	Student Spin Right				
9999	5	45	72	Instructor Nose High U/A				
9999	5	72	95	Student Nose High U/A				
9999	5	95	125	Instructor Nose Low U/A				
9999	5	125	162	Student Nose Low U/A				
9999	6	0	50	Instructor Vertical U/A				
9999	6	50	100	Student Vertical U/A				
9999	6	100	130	Instructor Wing Over Left				
9999	6	130	160	Student Wing Over Left				
9999	6	160	185	Instructor Wing Over Right				
9999	6	185	210	Student Wing Over Right				
9999	7	0	125	Standard Rejoin and Circuit	1000	130		
9999	7	125	205	Full Stop Landing				
9999	8	0	30	Ground Run and Calibration				

Flight 42 18/07/80 Half Fuel Mission 3

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1026 Wind 270/5-10

FM: 18078000240020000040100020O 0 0 2 13 1 0 0 0 0.9

Fuel Used: 20 l.

Known Faults None

Calibration File: No

Tape 1					Entry		Exit	
Elapsed	File	Start	Stop		Alt	A/S	Alt	A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	50	IF Take-off				
9999	2	50	200	Flapless Circuit				
9999	2	200	303	Flapless Touch and Go				
9999	3	0	35	Instructor Wing Over Left				
9999	3	35	65	Student Wing Over Right				
9999	4	0	30	Instructor Loop				
9999	4	30	60	Student Loop				
9999	5	0	30	Instructor Wing Over Left				
9999	5	30	60	Student Wing Over Right				
9999	5	60	85	Instructor Loop				
9999	5	85	107	Student Loop				
9999	6	0	37	Student Slow Roll Left				
9999	7	0	32	Instructor Slow Roll Right				
9999	8	0	30	Instructor Loop				
9999	8	30	60	Student Loop				
9999	9	0	35	Instructor Idle Power Stall				
9999	9	35	75	Student Idle Power Stall				
9999	10	0	85	Instructor Land Flap Stall				
9999	11	0	90	Student Land Flap Stall				
9999	12	0	37	Instructor Turning Stall Right				
9999	12	37	66	Student Turning Stall Left				
9999	13	0	112	Practice Forced Landing				
9999	13	112	155	Full Stop Landing				
9999	14	0	27	Ground Run and Calibration				

Flight 43 21/07/80 Half Fuel Mission 4

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1022 13C Wind South-Westerly 10 kts.

FM: 2107800024002000000401000200 0 0 2 6 0 0 0 0 0.8

Fuel Used: 35 l.

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	145	Short Take-off				
9999	3	0	87	Short field Landing				
9999	3	87	160	Normal Take-off				
9999	4	0	42	Instructor Steep Turn Left				
9999	4	42	76	Student Steep Turn Right				
9999	5	0	27	Loop				
9999	5	27	60	Instructor Slow Roll Left				
9999	5	60	87	Student Slow Roll Right				
9999	6	0	45	Instructor Idle Power Stall				
9999	6	45	92	Student Idle Power Stall				
9999	7	0	85	Instructor Full Flap Stall				
9999	7	85	155	Student Full Flap Stall				
9999	8	0	125	Practice Forced Landing				
9999	8	125	225	Touch and Go				
9999	8	225	337	Low Level Circuit				
9999	8	337	437	Touch and Go				
9999	9	0	75	Flapless Circuit	800	100		
Tape 2								
9999	3	0	50	End of Flapless Circuit				
9999	3	50	120	Flapless Full Stop Landing				
9999	4	0	30	Ground Run and Calibration				

Flight 44 22/07/80 0930 Half Fuel Mission 5

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1028 13C Calm Runway 36

FM: 22078000240002000000401000200 0 0 4 24 3 0 0 0 0.7

Fuel Used: 20 l.

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	27	Ground Run and Calibration				
9999	2	0	82	Take-off				
9999	3	0	27	Instructor Wing Over Left		120		
9999	3	27	55	Student Wing Over Right				
9999	3	55	80	Intructor Stall Turn Right (Fell Out)		130		
9999	3	80	105	Intructor Stall Turn Right				
9999	3	105	130	Intructor Stall Turn Right		130		
9999	3	130	160	Student Stall Turn Left				
9999	3	160	187	Instructor Wing Over Left				
9999	3	187	212	Student Wing Over Right				
9999	3	212	237	Instructor Stall Turn Left				
9999	3	237	267	Student Stall Turn Right				
9999	4	0	100	Return to Base	2000	140		
9999	4	100	225	Initial and Pitch?				
9999	4	225	316	Full Stop Landing				
9999	5	0	25	Ground Run and Calibration				

Flight 45 22/07/80 1400 Half Fuel Mission 6

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1028 13C Calm Runway 36

FM: 2207800024000200000040102000 0 0 0 20 4 0 0 0 0.8

Fuel Used: 40 l.

Known Faults None

Calibration File: No

Tape 1

Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	25	Ground Run and Calibration				
9999	2	0	62	Take-off				
9999	3	0	30	Stall Turn Right				
9999	3	30	55	Stall Turn Left				
9999	3	55	90	Instructor Roll Off the Top				
9999	3	90	125	Student Roll Off the Top				
9999	3	125	170	Idle Power Stall				
9999	3	170	245	Land Flap Stall				
9999	4	0	30	Instructor Barrel Roll Right				
9999	4	30	50	Student Barrel Roll Left				
9999	5	0	27	Stall Turn				
9999	6	0	30	Instructor Roll Off the Top				
9999	7	0	25	Student Roll Off the Top				
9999	8	0	25	Instructor Barrel Roll Left				
9999	8	25	50	Student Barrel Roll Right				
9999	10	0	15	Instructor Break Turn				
9999	11	0	20	Student Break Turn				
9999	13	0	58	Sustained Max Rate Turn				
9999	14	0	125	Return to Base				
9999	14	125	230	Full Stop Landing				
9999	15	0	25	Ground Run and Calibration				

Flight 46 23/07/80 Half Fuel Mission 8 (Undercarriage)

Base: Edinburgh

Pilot: F/L W Spears

Weather: QNH 1029 9C Wind Light and Variable Runway 36

FM: 2407800024002000000401001300 0 0 0 0 0 0 0 0 1.0

Fuel Used: Unknown

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	40	Normal Take-off 28"MP 2750RPM				
9999	2	0	95	Normal Touch and Go on 36				
9999	3	0	85	Flapless Touch and Go				
9999	4	0	70	Practice Forced Landing Touch and Go				
9999	5	0	95	Touch and Go				
9999	6	0	30	Taxiing on Grass				
9999	6	30	75	Normal Take-off on Grass				
9999	7	0	100	Touch and Go on Grass				
9999	8	0	60	Flapless Touch and Go on Grass				
9999	9	0	87	Practice Forced Landing Full Stop				
9999	9	87	150	Short field Full Stop on Grass				
9999	9	150	225	Circuit				
9999	9	225	287	Short field Full Stop on Grass				
9999	9	287	325	Normal Take-off on Grass				
9999	10	0	100	Circuit				
9999	10	100	190	Normal Touch and Go				
Tape 2								
9999	5	0	50	Circuit				
9999	5	50	120	Flapless Full Stop On Grass				
9999	6	0	108	Practice Forced Landing Touch and Go				
9999	7	0	46	End of Touch and Go				
9999	8	0	50	Circuit				
9999	8	50	150	Short field Full Stop				
9999	8	150	190	Taxiing				
9999	9	0	30	Ground Run and Calibaration				

Flight 47 24/07/80 Airframe Overspeed Flight 2

Base: Edinburgh

Pilot: F/L T Jones

Weather: Fine, Wind Light and Variable

FM: 2407800023002000000401000500 0 0 0 5 4 3 1 0 1.2

Fuel Used: unknown

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	45	Ground Run and Calibration				
9999	2	0	70	Take-off and Climb Out				
9999	3	25	100	Take-off Flap Overspeed 120kts.	7000	120		
9999	3	100	220	Full Flap Overspeed 110kts.				
9999	3	225	300	LH Spiral Dive, Full Right Aileron 4.7G				
9999	3	300	350	RH Spiral Dive, Full Left Aileron 4.7G				
9999	4	20	100	Vertical Dive, Maximum G Pull Up 7G				
9999	5	0	125	Maximum Air Speed Run 210kts?				
9999	7	0	37	Ground Run and Calibration				

Flight 48 05/08/80 Half Fuel Heavy Landing Fight

Base: Edinburgh

Pilot: F/L T Jones

Weather: QNH 1031 Wind 040/5-10 Runway 04 (Bitumen Threshold Grass Runway)

FM:

Fuel Used: unknown

Known Faults None

Calibration File: No

Tape 1 Elapsed	File	Start	Stop		Entry Alt	Entry A/S	Exit Alt	Exit A/S
9999	1	0	65	Ground Run and Calibration				
9999	2	0	75	Normal Landing, Power Off, No Flare, 2.5G Fuel 2001b				
9999	3	0	88	Normal Landing, 5kts Too Slow, Smooth				
9999	4	0	80	Normal Landing, 5kts Too Slow, Smooth				
9999	5	0	75	Normal Landing, Too Slow, Power Off, Drop 1.7G				
9999	6	0	120	Normal Landing, 10kts Too Slow, Hold Off High 2.0G Fuel 1701b				
9999	7	0	85	Normal Landing, 10kts Too Slow, Hold Off High 2.0G				
9999	8	0	80	Short field 60kts, Nose Wheel First 2.0G Fuel 1601b				
9999	9	0	112	Short field 60kts, 3 Wheels on 2.0g				
9999	10	0	65	Flapless Landing, Nose First 1.8G				
9999	11	0	65	Flapless Landing, Smooth				
9999	12	0	80	Flapless Landing 1.3G Fuel 1401b				
9999	13	0	95	Practice Forced Landing 1.3G				
9999	14	0	62	Practice Forced Landing 1.6G				
9999	15	0	62	Practice Forced Landing, Held Off				
Tape 2								
9999	1	0	62	Practice Forced Landing 1.9G				
9999	2	0	45	Practice Forced Landing 1.5G Fuel 1201b				
9999	3	0	85	Normal Landing 1.7G				
9999	4	0	65	Normal Landing 2.4G				
9999	5	0	110	Normal Landing 3.1G				
9999	6	0	82	Normal Landing 1.9G Fuel 1101b				
9999	7	0	100	Normal Landing 2.3G				

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16. Abstract

Between 1978 and 1980 The Aircraft Research and Development Unit (ARDU) and ARL carried out a series of flight trials in order to determine typical load histories for a CT4 Airtrainer. These supplied representative flight data which provided the basis of load sequences used in the full scale fatigue test. This report describes the parameters measured and lists the transcripts of the pilots' voice records.

This paper is to be used to record information which is required by the Establishment for its own use but which will not be added to the DISTIS data base unless specifically requested.

16. Abstract *(Continued)*

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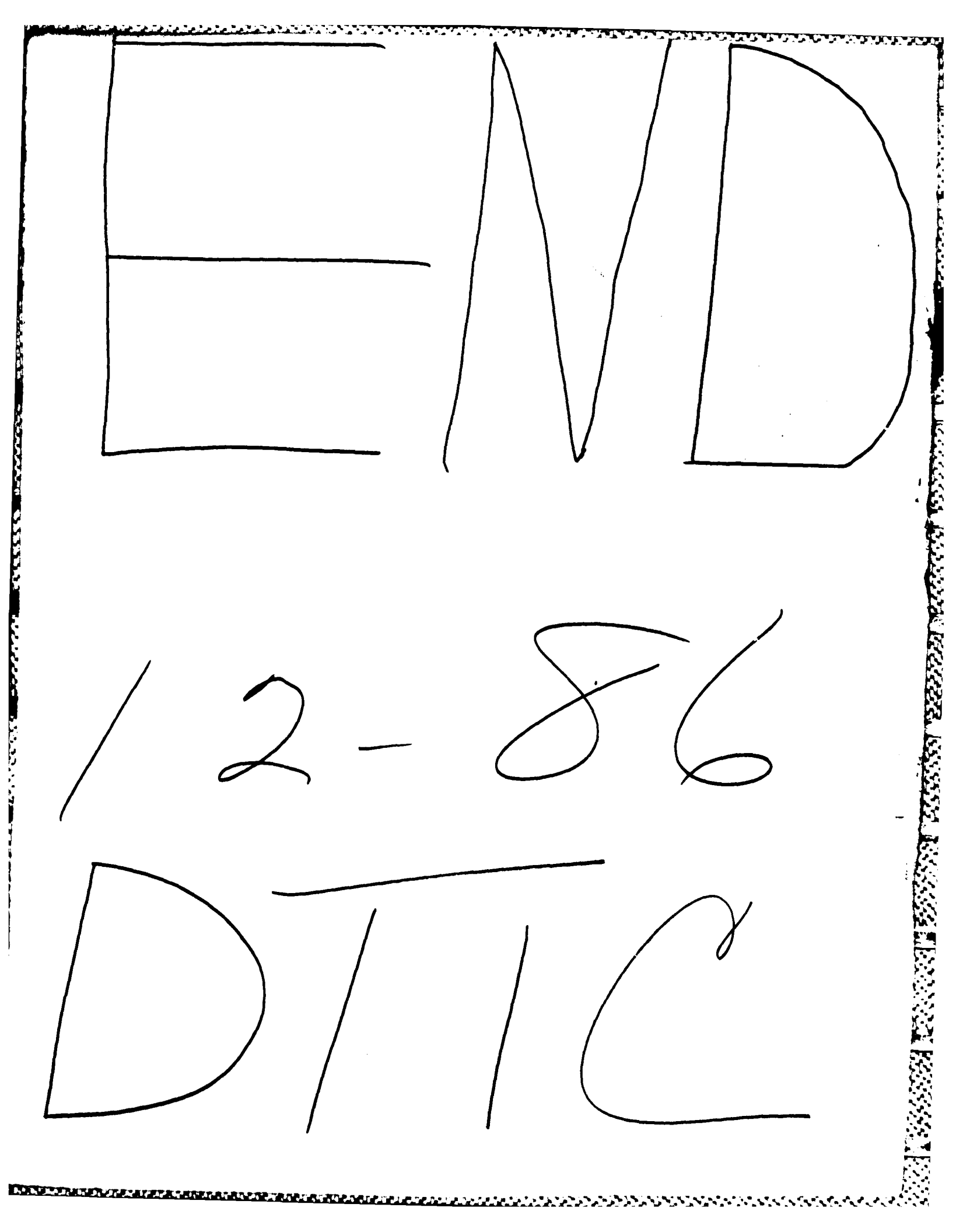
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